

FIG. 1

	A	B	C	D	E	F	G	H	I	
1	<b>Customer Benefit Model</b>									
2										
3										
4										
5	<b>Files</b>									
6	Project Name									
7	CBM Directory									
8	CBM DE Directory									
9	CBM Project Directory									
10	Simulation Directory									
11										
12										
13										
14	Time to run Simulation (days)									
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
									<b>Workflow</b>	
									<b>Create Project</b>	
									<b>Shift Data</b>	
									<b>Line Configuration</b>	
									<b>Board Data</b>	
									<b>Create Simulation</b>	
									<b>Save and Exit</b>	
									<b>Build your project and set up the directory for experiments</b>	
									Scenario #	
									052201e	
									C:\lanRawles\Projects\CBM\lates\thomas2\So	
									C:\lanRawles\Projects\CBM\lates\thomas2\So	
									C:\lanRawles\Projects\CBM\lates\thomas2\projects\052201d	
									C:\lanRawles\Projects\CBM\lates\thomas2\projects\052201d	
									C:\program files\simulation2000	

**FIG. 2**

	W	X	Y	Z	AA	AB
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						

C:\VanRawles\Projects\CBM\latest\thomas2  
 C:\VanRawles\Projects\CBM\latest\thomas2\So  
 C:\VanRawles\Projects\CBM\latest\thomas2\projects\0522201d

FIG. 2A

	Name	Size	Type	Date & Time
	□1	550KB	Microsoft Excel-Tab	16:05:01 13:21
	□CBM.xls	550KB	Microsoft Excel-Tab	16:05:01 13:03
	□CBM.Reports.xls	550KB	Microsoft Excel-Tab	16:05:01 13:07
	□CBM.transfer.xls	550KB	Microsoft Excel-Tab	16:05:01 13:08
Desktop				
My Computer				
Diskette A				
(C:)				
(D:)				
	□Data			
	□Recycler			
	□Tmm_XXXX			
	□CBA Calculator			
	□CTM			
	□COO			
	□Pricing			
	□S.G.S.			
	□Sales Training			
	□SIPLACE CBM			
	□Projects			
	□Test 2001-05-16-01			
	□1			
	□Test 1			
	□Test 2			
	□Test 3			
	□Test 4			
	□So			
	□SIPLACE CEM ARCHIVE			

FIG. 3

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
<b>Main</b>																					
<b>1</b>	<b>Shift Schedule</b>										<b>SHIFT 1</b>										
<b>3</b>	shift start break start end										lunch start end	break 1 start	break 2 start	shift end	shift start break 1 end	break 2 start	lunch end	break 1 start	break 2 end	shift start end	
<b>4</b> Monday	14	7:00	7:00	12:00	12:00	13:00	13:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	23:00	
<b>5</b> Tuesday	14	7:00	7:00	12:00	12:00	13:00	13:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	23:00	
<b>6</b> Wednesday	14	7:00	7:00	12:00	12:00	13:00	13:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	23:00	
<b>7</b> Thursday	14	7:00	7:00	12:00	12:00	13:00	13:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	23:00	
<b>8</b> Friday	14	7:00	7:00	12:00	12:00	13:00	13:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	23:00	
<b>9</b> Saturday	14	7:00	7:00	12:00	12:00	13:00	13:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	23:00	
<b>10</b> Sunday	14	7:00	7:00	12:00	12:00	13:00	13:00	13:00	13:00	13:00	15:00	15:00	15:00	15:00	15:00	15:00	20:00	21:00	21:00	23:00	
<b>11</b> shifts apply for model	0	1																			
<b>12</b> Initial Offset																					
<b>13</b> Only lunch break applies																					
<b>14</b> Breaks apply for machines																					
<b>15</b> Weeks per year																					
<b>16</b> Days off per year																					
<b>17</b> Hours per day																					
<b>18</b> Hours per day/average																					
<b>19</b> Hours per week																					
<b>20</b> Hours per week/average																					
<b>21</b> Hours per year																					
<b>22</b>																					
<b>23</b>																					
<b>24</b>																					
<b>25</b>																					
<b>26</b>																					
<b>27</b>																					
<b>28</b>																					
<b>29</b>																					
<b>30</b>																					

**FIG. 4**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
31				12	7:00	12:00	13:00			15:00	15:00		20:00	21:00				23:00		23:00	
32				13	7:00	8:00	8:15	12:00	12:30	15:00	15:15	19:30	20:00	20:15	0:00	0:30	3:00	3:15	7:00		
33				14	7:00			12:00	13:00			15:00			20:00	21:00		23:00		23:00	
34				15																	
35				16																	
36				17																	
37				18																	
38				19																	
39				20																	
40				21																	
41				22																	
42				23																	

FIG. 4A

	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	
<b>SHIFT 3</b>																					
<b>shift 1</b>										<b>shift 2</b>										<b>shift 3</b>	
3	break 1 start	break 1 end	lunch start	lunch end	break 2 start	break 2 end	shift end			total	lunch	break1	break2			total	lunch	break1	break2		
4	23:00	23:00	4:00	5:00	5:00	5:00	7:00			8:00	1:00	0:00	0:00			8:00	1:00	0:00	0:00		
5	23:00	23:00	4:00	5:00	5:00	5:00	7:00			8:00	1:00	0:00	0:00			8:00	1:00	0:00	0:00		
6	23:00	23:00	4:00	5:00	5:00	5:00	7:00			8:00	1:00	0:00	0:00			8:00	1:00	0:00	0:00		
7	23:00	23:00	4:00	5:00	5:00	5:00	7:00			8:00	1:00	0:00	0:00			8:00	1:00	0:00	0:00		
8	23:00	23:00	4:00	5:00	5:00	5:00	7:00			8:00	1:00	0:00	0:00			8:00	1:00	0:00	0:00		
9	23:00	23:00	4:00	5:00	5:00	5:00	7:00			8:00	1:00	0:00	0:00			8:00	1:00	0:00	0:00		
10	23:00	23:00	4:00	5:00	5:00	5:00	7:00			8:00	1:00	0:00	0:00			8:00	1:00	0:00	0:00		
11										56:00	7:00	0:00	0:00			56:00	7:00	0:00	0:00		
12										168:00						168:00					
13										168:00						168:00					
14										24:00						24:00					
15																					
16																					
17																					
18																					
19																					
20																					
21	18	19	20		21	22	23	24													
22	break 1 start	break 1 end	lunch start	lunch end	break 2 start	break 2 end	shift end														
23																					
24																					
25																					
26																					
27																					
28	0:00	0:15	2:00	2:30						6:00	→ Default										
30																					

FIG. 4B

	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO
31			4:00	5:00									7:00	→Customer 1						
32														→Customer 2						
33			4:00	5:00									7:00	→Customer 3						
34															→Customer 4					
35																				
36																				
37																				
38																				
39																				
40																				
41																				
42																				

FIG. 4C

	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S
1																		
2	Insert																	
3	row																	
4	delete row																	
5																		
9	1	7300 Buffer																
10	2	7511 Conveyor	1060															
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		
31																		
32																		
33																		
34																		

FIG. 5

FIG. 5A

FIG. 5B

	AU	AV	AW	AX	AY	AZ
1						
2						
3						
4						
5						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						

Bare Board Loader  
Buffer  
Conveyor 1060  
Conveyor 1590  
Conveyor 2380  
F4 x 2 / SPL  
F4 x 3 / SPL  
F5  
F5 x 2 / SPL  
F5 x 3 / SPL  
Flip Station 180  
HS-50  
HS-50 x 2 / SPL  
HS-50 x 3 / SPL  
Last Lift  
Magazine Buffer MB100  
Magazine Buffer MB50  
Magazine Loader ML02  
Magazine Loader ML05  
Magazine Unloader MJ02  
Magazine Unloader MJ05  
Printer pro-flow  
Printer pro-flow temp control  
Printer squeegee operation  
Printer squeegee operation temp control  
RX 261  
RX 262  
RX 331  
RX 332  
RX 411  
RX 412

	AU	AV	AW	AX	AY	AZ
35				S-20		
36				S-23		
37				S-25		
38				Shuttle-1 lane to 2 lane		
39				Shuttle-2 lane to 1 lane		
40				Telescopic Gate TG		
41				Turn Station TS		

**FIG. 5C**

6  
EIGEN

FIG. 7

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
33	F4 x 2/SPL																	
34	F4 x 3/SPL	1042																
35	F5	1043																
36	F5 x 2/SPL	1050																
37	F5 x 3/SPL	1052																
38	Flip Station 180	1053																
39	HS-50	7580																
40	HS-50 x 2/SPL	1500																
41	HS-50 x 3/SPL	1502																
42	Last Lift	1503																
43	Magazine Buffer MB100	7590																
44	Magazine Buffer MB50	7320																
45	Magazine Loader ML02	7310																
46	Magazine Loader ML05	7600																
47	Magazine Unloader MU02	7610																
48	Magazine Unloader MU05	7601																
49	Printer pro-flow	7611																
50	Printer pro-flow temp control	6003																
51	Printer squeegee operation	9004																
52	Printer squeegee operation temp control	9001																
53	RX 261	9002																
54	RX 262	8001																
55	RX 331	8002																
56	RX 332	8003																
57	RX 411	8004																
58	RX 412	8005																
59	S-20	8006																
60	S-23	1200																
61	S-25	1230																
62	Shuttle - 1 lane to 2 lane	1250																
63	Shuttle - 2 lane to 1 lane	7100																
64	Telescopic Gate TG	7200																
65	Turn Station TS	7550																
66		7570																
67																		
68																		

FIG. 7A

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
33	F4 x 2 / SPL	1042																
34	F4 x 3 / SPL	1043																
35	F5	1050																
36	F5 x 2 / SPL	1052																
37	F5 x 3 / SPL	1053																
38	Flip Station 180	7560																
39	HS-50	1500																
40	HS-50 x 2 / SPL	1502																
41	HS-50 x 3 / SPL	1503																
42	Last Lift	7500																
43	Magazine Buffer MB100	7320																
44	Magazine Buffer MB50	7310																
45	Magazine Loader ML02	7600																
46	Magazine Loader ML05	7610																
47	Magazine Unloader MU02	7601																
48	Magazine Unloader MU05	7611																
49	Printer pro-flow	9003																
50	Printer pro-flow temp control	9004																
51	Printer squeegee operation	9001																
52	Printer squeegee operation temp control	9002																
53	RX 261	8001																
54	RX 262	8002																
55	RX 331	8003																
56	RX 332	8004																
57	RX 411	8005																
58	RX 412	8006																
59	S-20	1200																
60	S-23	1230																
61	S-25	1250																
62	Shuttle - 1 lane to 2 lane	7100																
63	Shuttle - 2 lane to 1 lane	7200																
64	Telescopic Gate TG	7550																
65	Turn Station TS	7570																
66																		
67																		
68																		

FIG. 7B

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
69	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	163.20	
70																		
71																		
72																		
73																		
74																		
75																		
76																		
77																		
78																		
79																		
80																		
81																		
82																		
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84																		
85																		
86																		
87																		
88																		
89																		
90																		
91																		
92																		
93																		
94																		
95																		
96																		
97																		
98																		
99																		

FIG. 7C

FIG. 7D

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
33	4080.00	8160.00	600	0	S25Cluster2_L1	S25Cluster2	Lift1							450		
34	4080.00	8160.00	900	0	S25Cluster3_L1	S25Cluster3	Lift1							875		
35	4080.00	8160.00	200	0	S25_L1	S25	Conveyor001							200		
36	4080.00	8160.00	600	0	S25Cluster2_L1	S25Cluster2	Lift1							450		
37	4080.00	8160.00	900	0	S25Cluster3_L1	S25Cluster3	Lift1							875		
38	4080.00	8160.00	200	0	Flip_Station		Printermc							200		
39	4080.00	8160.00	350	0	HS50_L1	HS50	Conveyor001							400		
40	4080.00	8160.00	900	0	HS50Cluster2_L	HS50Cluster2L	Lift1							850		
41	4080.00	8160.00	1350	0	HS50Cluster3_L	HS50Cluster3L	Lift1							1250		
42	4080.00	8160.00	100	0	Lastlift		Lift4							700		
43	4080.00	8160.00	150	0	B1	B1								100		
44	4080.00	8160.00	150	0	Buffer_Magazine50	Buffer_Magazine50	Printermc							200		
45	4080.00	8160.00	200	0	Magazine_Loader12	Magazine_Loader12	Printermc							200		
46	4080.00	8160.00	200	0	Magazine_Loader5	Magazine_Loader5	Printermc							200		
47	4080.00	8160.00	200	0	Magazine_Unloader2	Magazine_Unloader2	Printermc							200		
48	4080.00	8160.00	200	0	Magazine_Unloader5	Magazine_Unloader5	Printermc							200		
49	4080.00	8160.00	200	0	Printer	Printer	Printermc							200		
50	4080.00	8160.00	200	0	Printer	Printer	Printermc							200		
51	4080.00	8160.00	200	0	Oven_1Lane	Oven_2	Oven_2001							700		
52	4080.00	8160.00	200	0	Oven_1Lane	Oven_2	Oven_2001							700		
53	4080.00	8160.00	1400	0	Oven_1Lane	Oven_2	Oven_2001							700		
54	4080.00	8160.00	1400	0	Oven_1Lane	Oven_2	Oven_2001							700		
55	4080.00	8160.00	1400	0	Oven_1Lane	Oven_2	Oven_2001							700		
56	4080.00	8160.00	1400	0	Oven_1Lane	Oven_2	Oven_2001							700		
57	4080.00	8160.00	1400	0	Oven_1Lane	Oven_2	Oven_2001							700		
58	4080.00	8160.00	200	0	S25_L1	S25	Conveyor001							200		
59	4080.00	8160.00	200	0	S25_L1	S25	Conveyor001							200		
60	4080.00	8160.00	200	0	S25_L1	S25	Conveyor001							100		
61	4080.00	8160.00	100	0	Shuttle1_2	Shuttle2_1	Shuttle							100		
62	4080.00	8160.00	200	0	ConvTG	conv5_2001	Shuttle							150		
63	4080.00	8160.00	100	0	Turn_Station	Printermc	Shuttle							200		
64	4080.00	8160.00	150	0												
65	4080.00	8160.00	200	0												
66	4080.00	8160.00	8160.00	0												
67	4080.00	8160.00	8160.00	0												
68	4080.00	8160.00	8160.00	0												

FIG. 7E

	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
69	4080.00															8160.00
70	4080.00															8160.00
71	4080.00															8160.00
72	4080.00															8160.00
73	4080.00															8160.00
74	4080.00															8160.00
75	4080.00															8160.00
76	4080.00															8160.00
77	4080.00															8160.00
78	4080.00															8160.00
79	4080.00															8160.00
80	4080.00															8160.00
81	4080.00															8160.00
82	4080.00															8160.00
83	4080.00															8160.00
84	4080.00															8160.00
85	4080.00															8160.00
86	4080.00															8160.00
87	4080.00															8160.00
88	4080.00															8160.00
89	4080.00															8160.00
90	4080.00															8160.00
91	4080.00															8160.00
92	4080.00															8160.00
93	4080.00															8160.00
94	4080.00															8160.00
95	4080.00															8160.00
96	4080.00															8160.00
97	4080.00															8160.00
98	4080.00															8160.00
99	4080.00															8160.00

FIG. 7F

	A	B	C	D	E	F	G	H	I	J	K	L	M
	Main												
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12	#	name	pc										
13	1	7300 Buffer	999	999	999	999	999	999	999	999	999	999	999
14	2	7511 Conveyor 1060	999	999	999	999	999	999	999	999	999	999	999

FIG. 8

	N	O	P	Q	R	S	T	U	V	W	X	Y
1												
2	10	11	12	13	14	15	16	17	18	19	20	21
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13	999	999	999	999	999	999	999	999	999	999	999	999
14	999	999	999	999	999	999	999	999	999	999	999	999

FIG. 8A

	Z	AA	AB	AC	AD	AE	AF	AG	AH
1									
2	22	23	24	25	26	27	28	29	30
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13	999	999	999	999	999	999	999	999	999
14	999	999	999	999	999	999	999	999	999

FIG. 8B

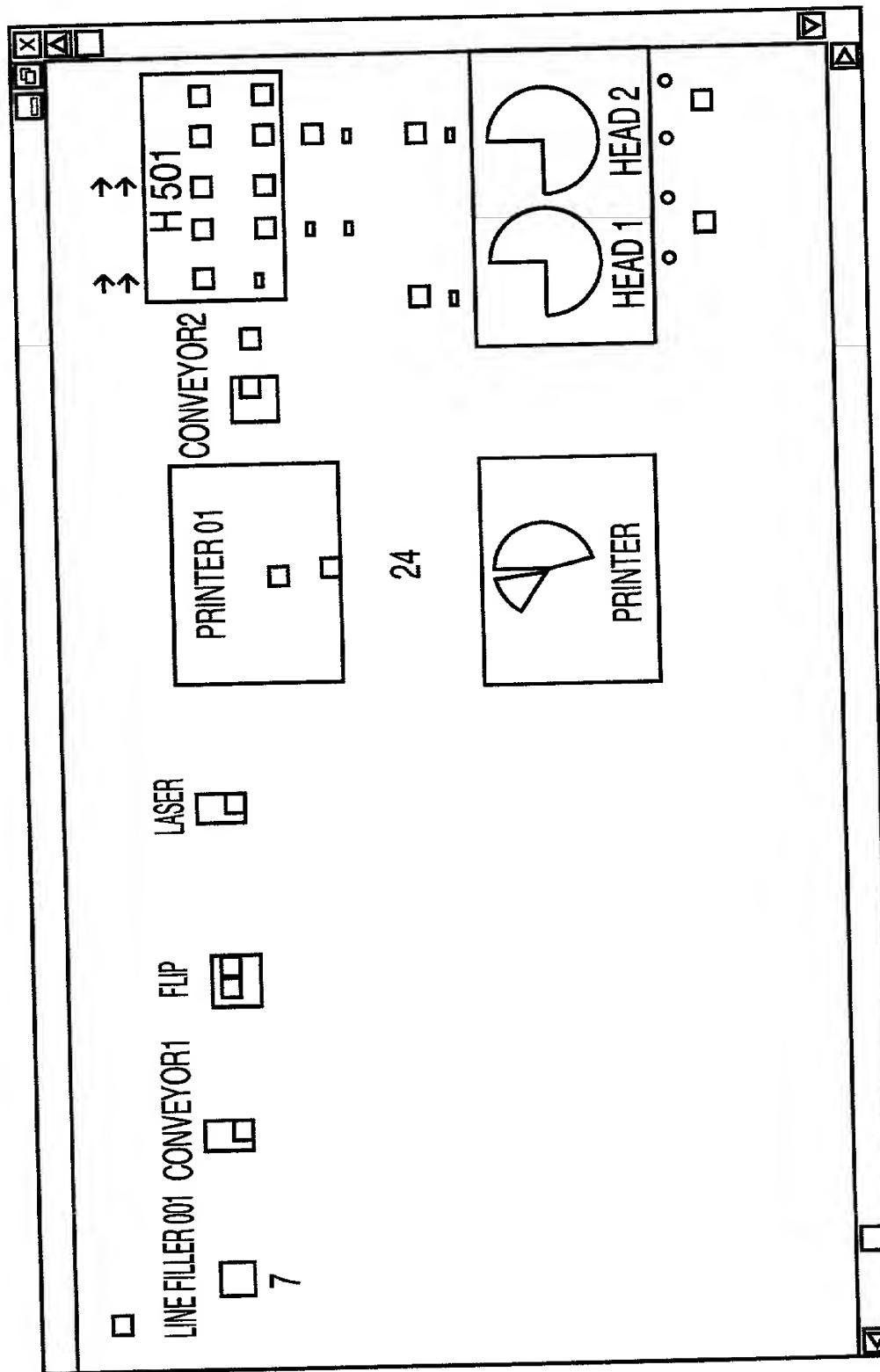


FIG. 9

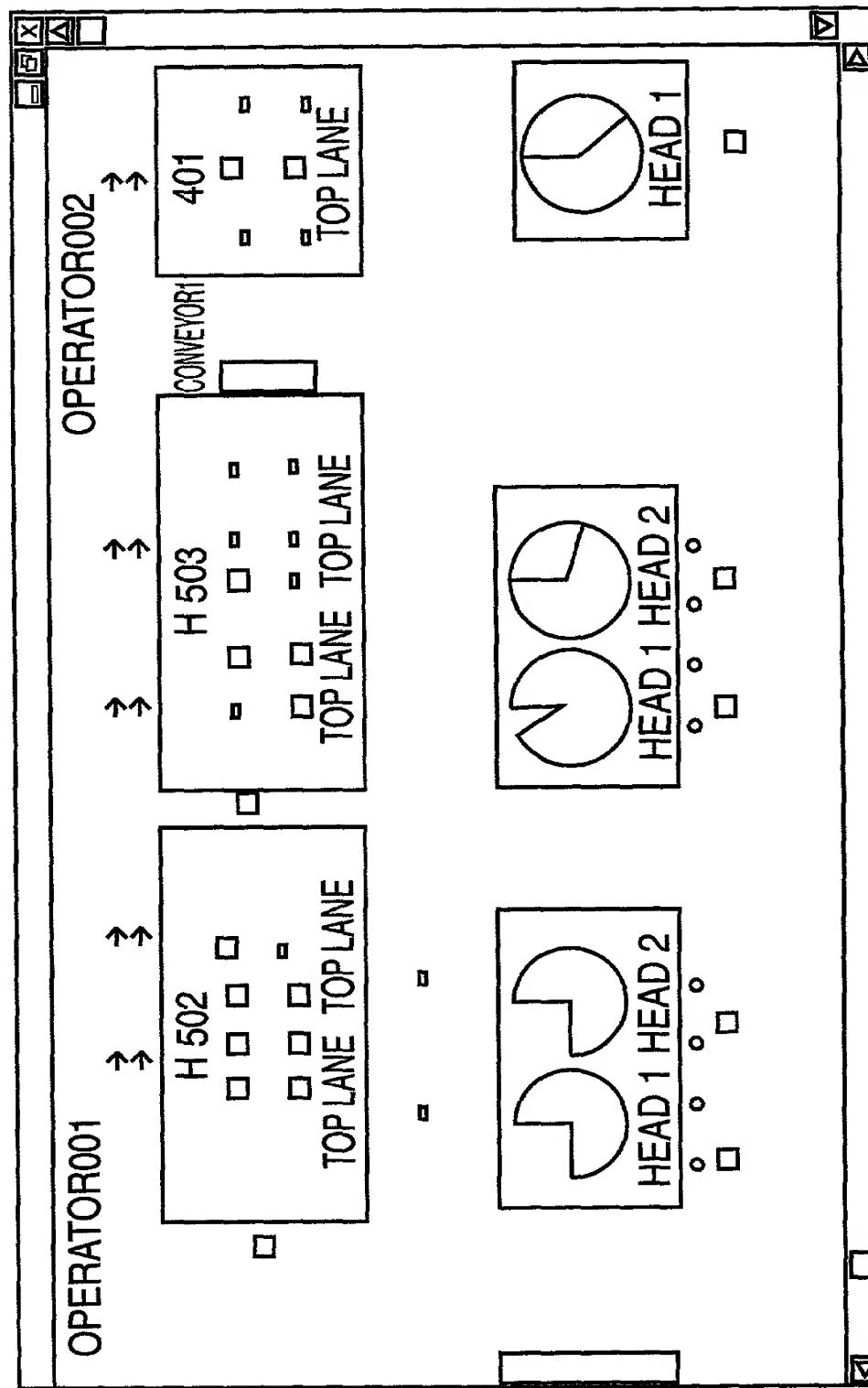


FIG. 9A

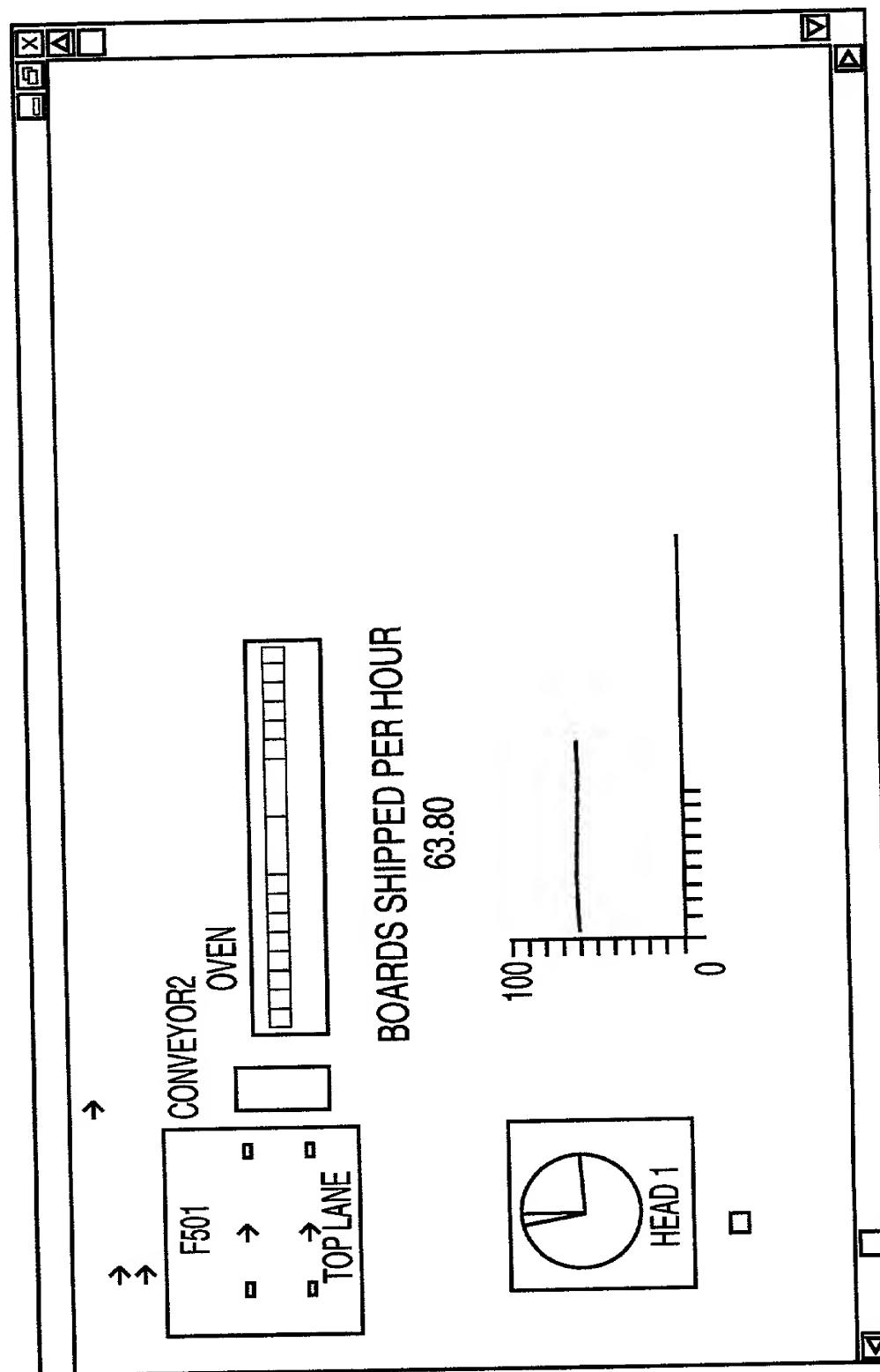


FIG. 9B

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												

FIG. 10

	A	B	C	D	E	F	G
<b>Boundaries</b>							
1							
2	Project	Test1					
3	Date	31/March 2001					
4							
5							
6	<b>Financial</b>						
7	Currency (Input)				0		
8	Currency (Output)				0	0.00	
9	Exchang ratio (In/Out)				0.00%	0.00%	
10	Depreciation				0	0.00%	
11	Interest Rate				0	0.00%	
12	<b>Labor</b>				0	0.00	
13	Operator				0	0.00	
14	Supervisor				0	0.00	
15	Maintenance				0	0.00	
16	Rework				0	0.00	
17	<b>Utilities</b>				0	0.00	
18	floorspace (/year/spm)				0	0.00	
19	electricity (kWh)				0	0.00	
20	Nitrogen (???)				0	0.00	
21	air (???)				0	0.00	
22							
23							
24							
25							
26							

**Main**

**FIG. 11**

FIG. 12

	A	B	C	D	E	F	G
<b>1</b>	<b>Setup</b>						
<b>2</b>							
<b>3</b>	<b>internal setup</b>						
<b>4</b>	Operator labor per hour	0.00					
<b>5</b>	setup changes every x h		0.00 hours				
<b>6</b>	# of setup changes per week			0			
<b>7</b>	setup changes per year				0 min.		
<b>8</b>	time per setup					0.00 hours	
<b>9</b>	setup time per year						0
<b>10</b>	internal setup costs						
<b>11</b>							
<b>12</b>	<b>external setup</b>						
<b>13</b>	external setup labour per hour				0 minutes per setup		
<b>14</b>	external setup					0.00 hours	
<b>15</b>	external setup per year						0
<b>16</b>	Investment for external setup						
<b>17</b>							
<b>18</b>							
<b>19</b>	external setup costs per year					0	
<b>20</b>							
<b>21</b>	setup costs					0	0

FIG. 13

	A	B	C	D	E	F	G	H
1	<b>Quality</b>							
2	material costs per board		0					
3	DPM			500				
4	components per board		100%		0			
5	first pass yield							
6	rework costs per board to rework							
7	scrap costs per board to rework							
8	rework costs per year				#DIV/0!			
9	scrap costs per year				#DIV/0!			
10						0		
11	quality costs per year				#DIV/0!			
12								
13								
14								
15								
16								
17								
18								

Main

FIG. 14

	A	B	C	D	E	F	G	H	I
1	<b>Maintenance</b>								
2	line workers								
3	maintenance per shift (min)								
4	maintenance weekly (min)								
5	maintenance monthly add. (min)								
6	maintenance quarterly add (min)								
7	maintenance every x h add (min)								
8	maintenance time calculated (h)								
9	labor costs								
10	maintenance costs per year								
11	0.000000 €								
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									

Main

FIG. 15

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2														
3														
4														
5														
9														
10														
11														
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FIG. 16

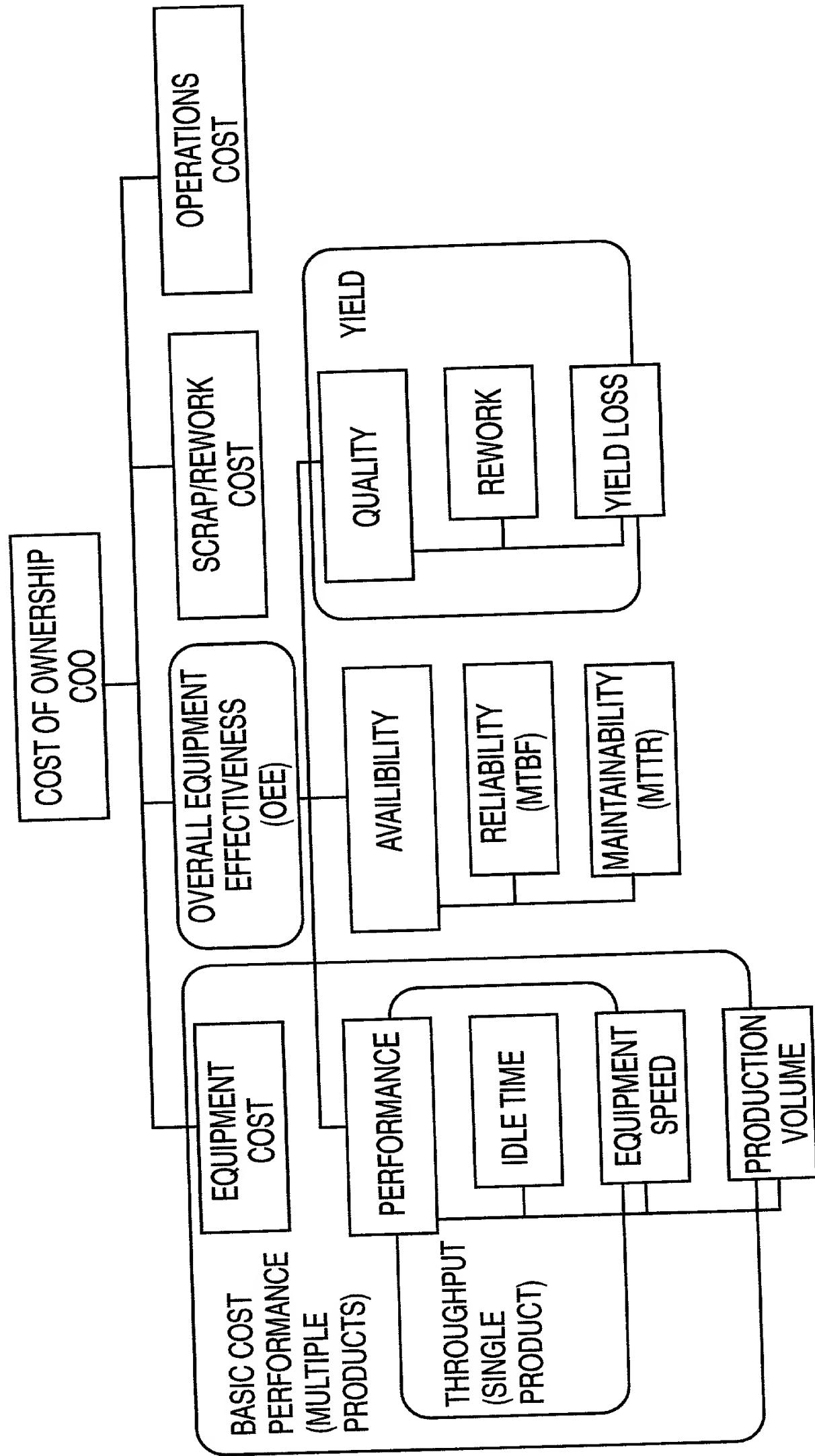


FIG. 16A

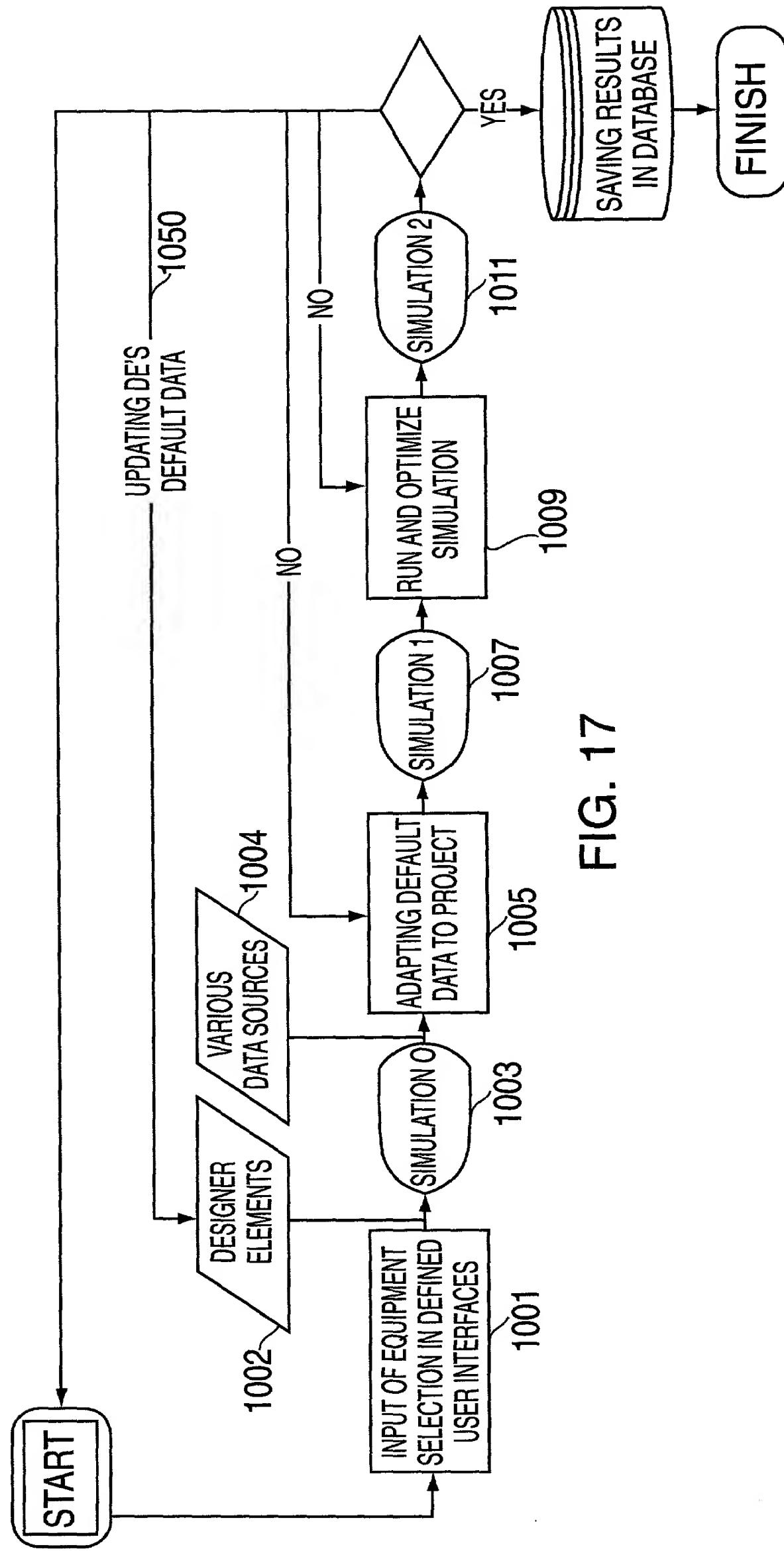


FIG. 17

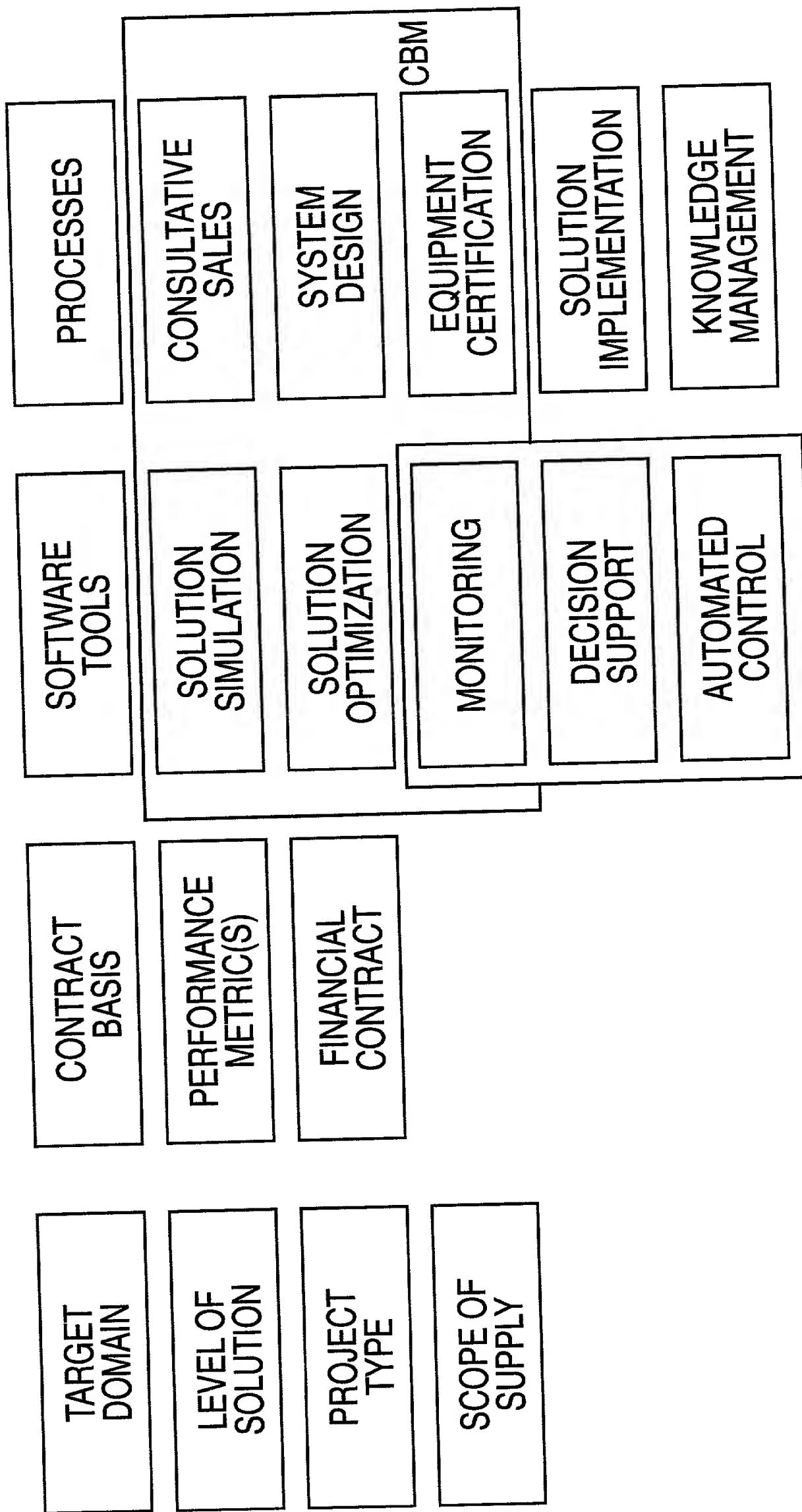


FIG. 18

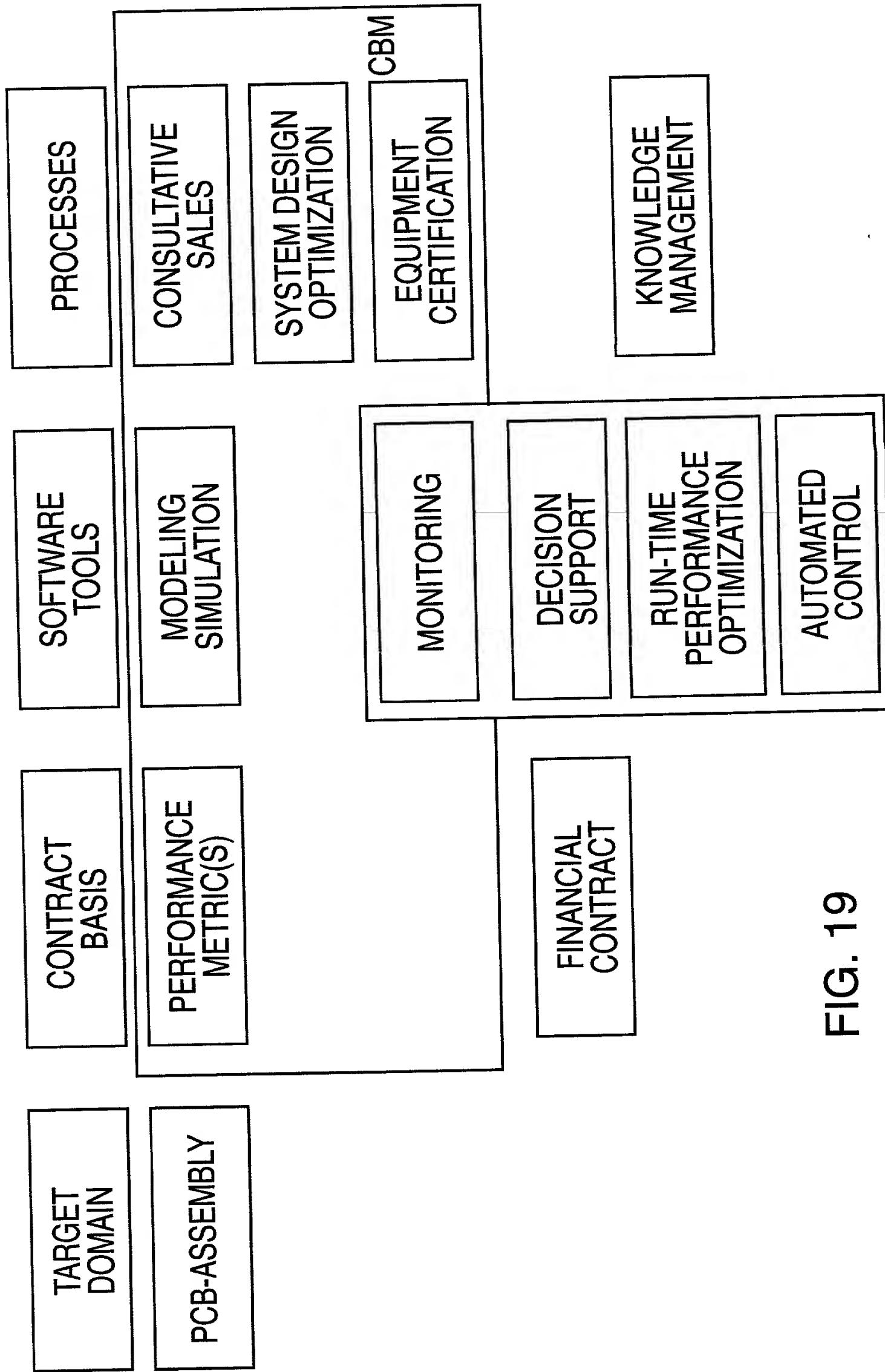


FIG. 19

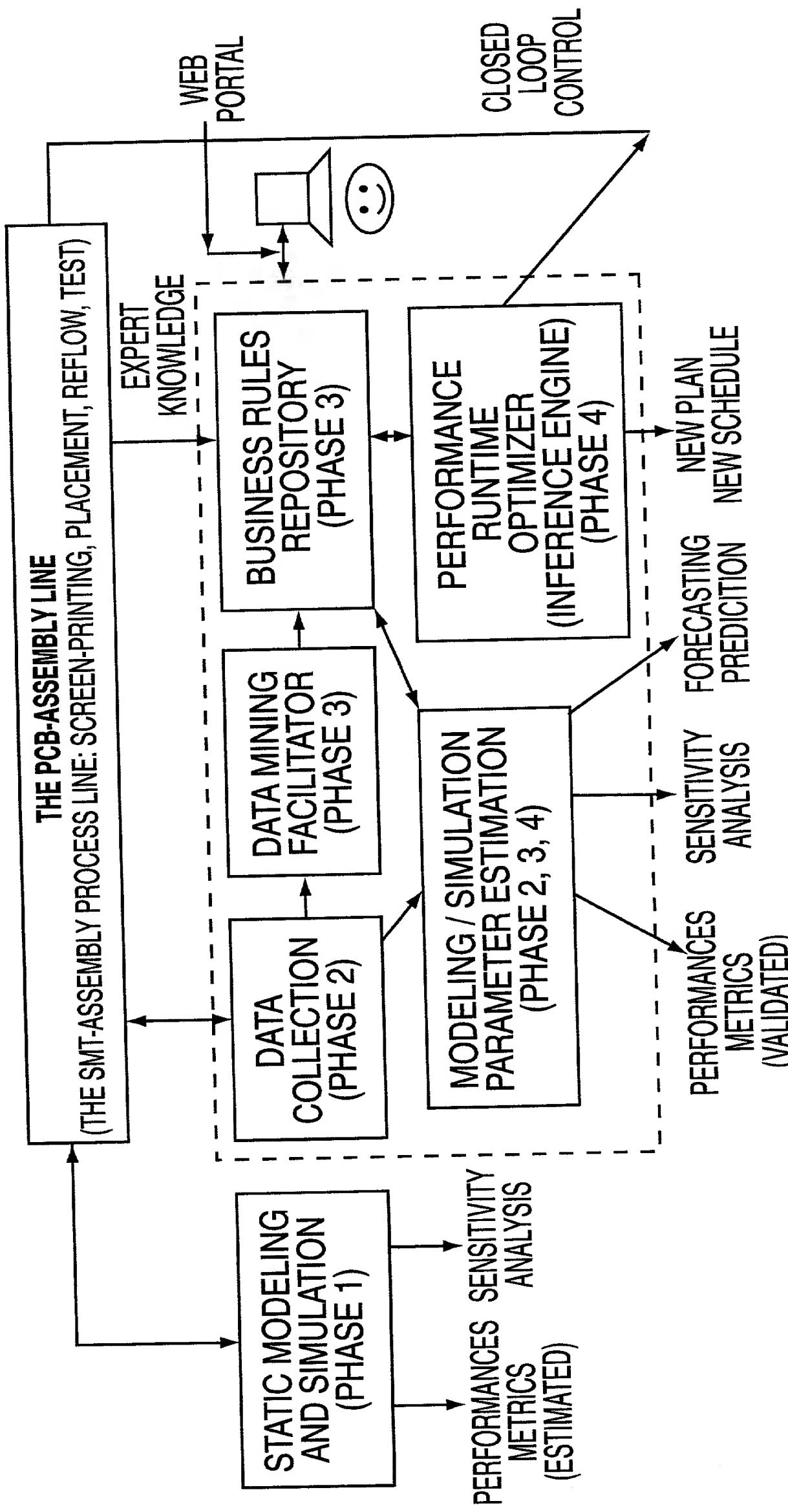


FIG. 20

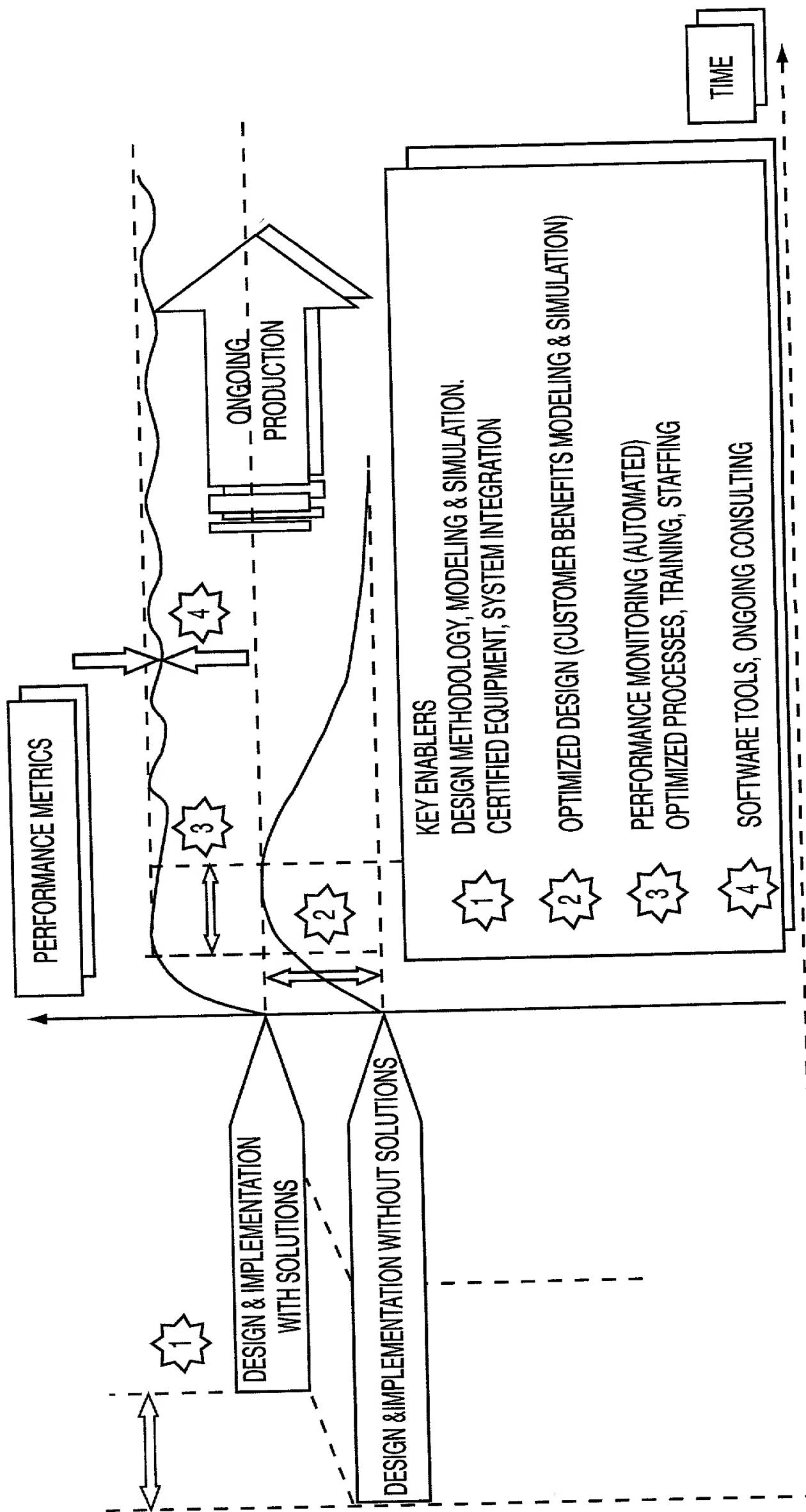


FIG. 21

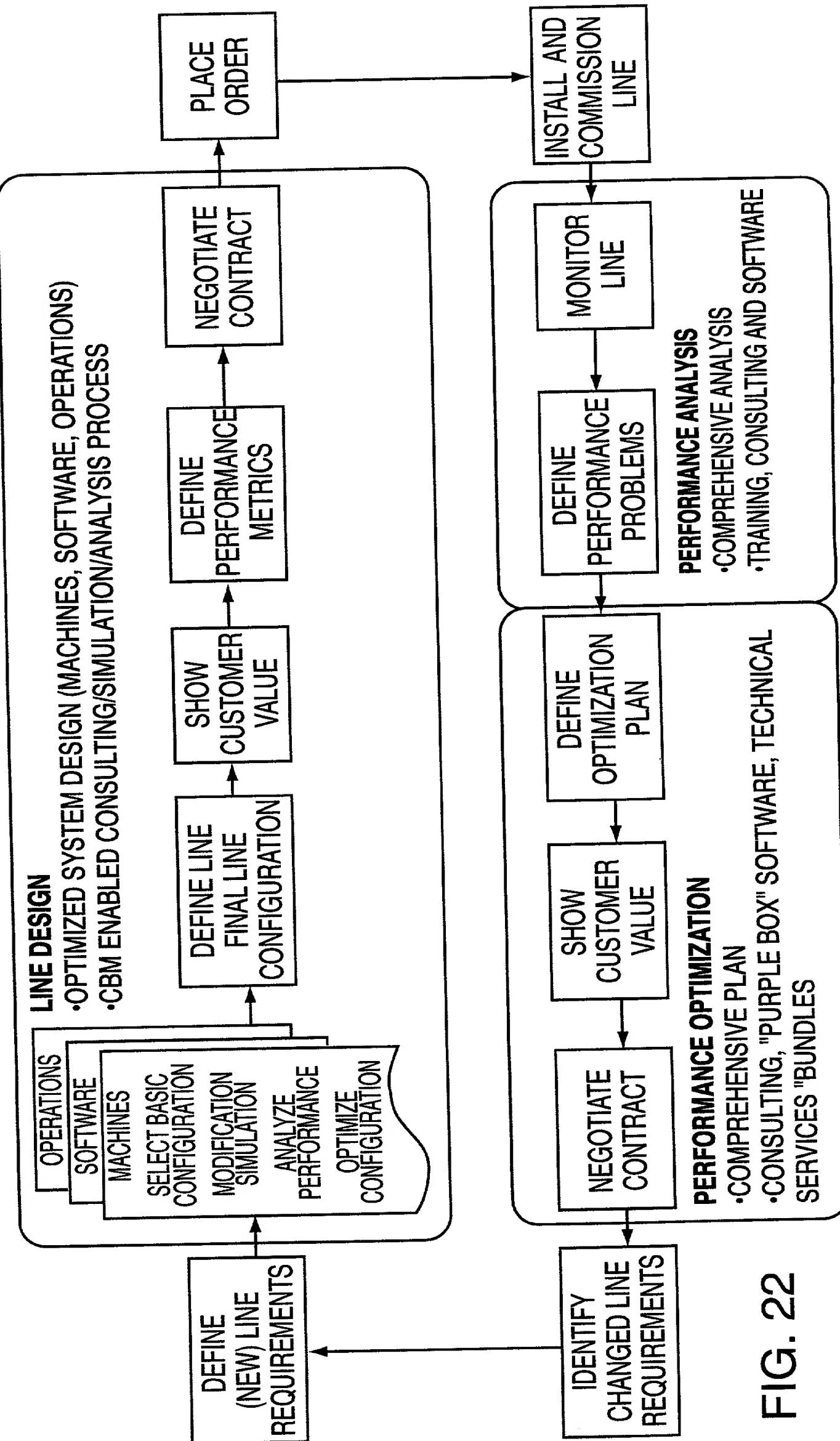
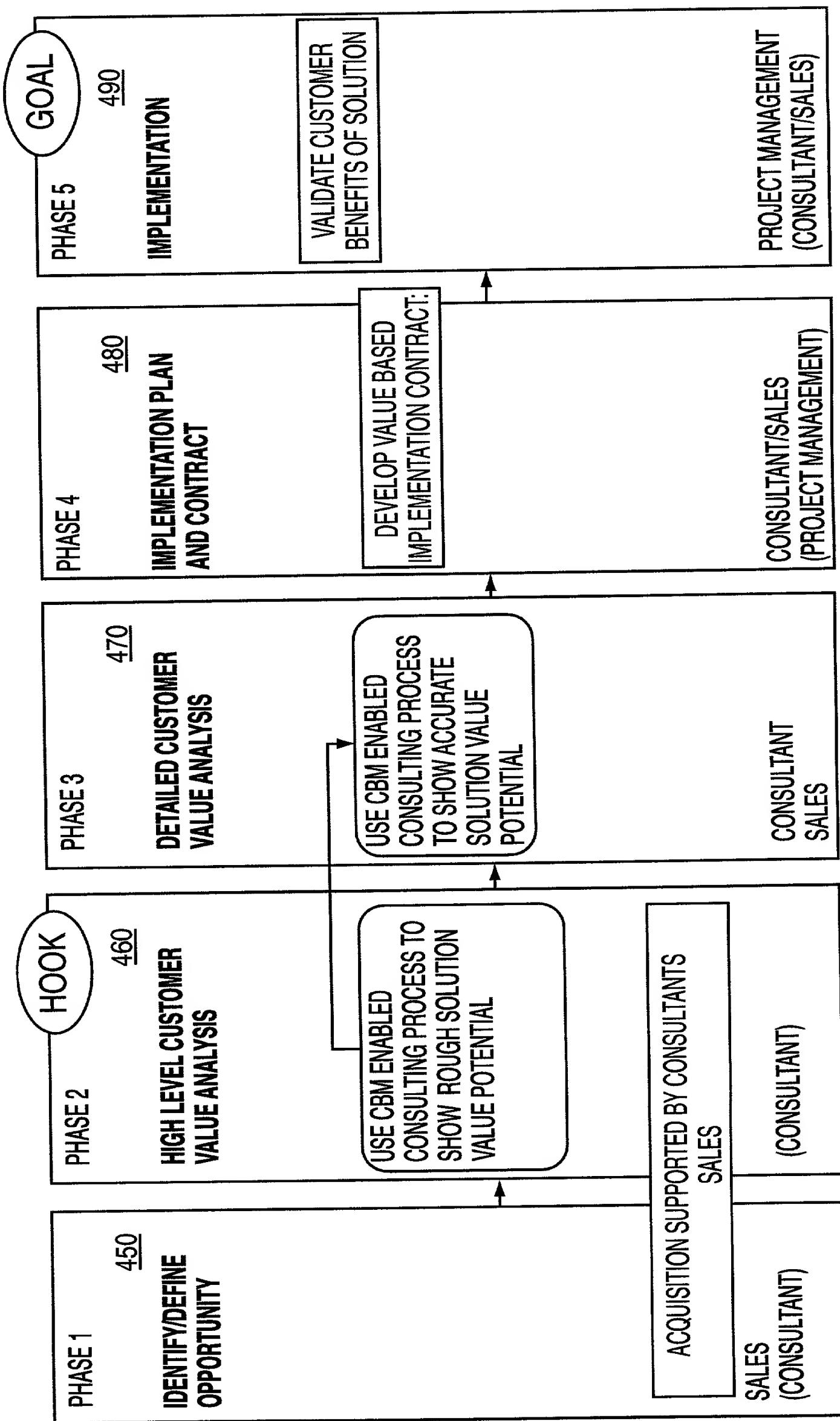


FIG. 22



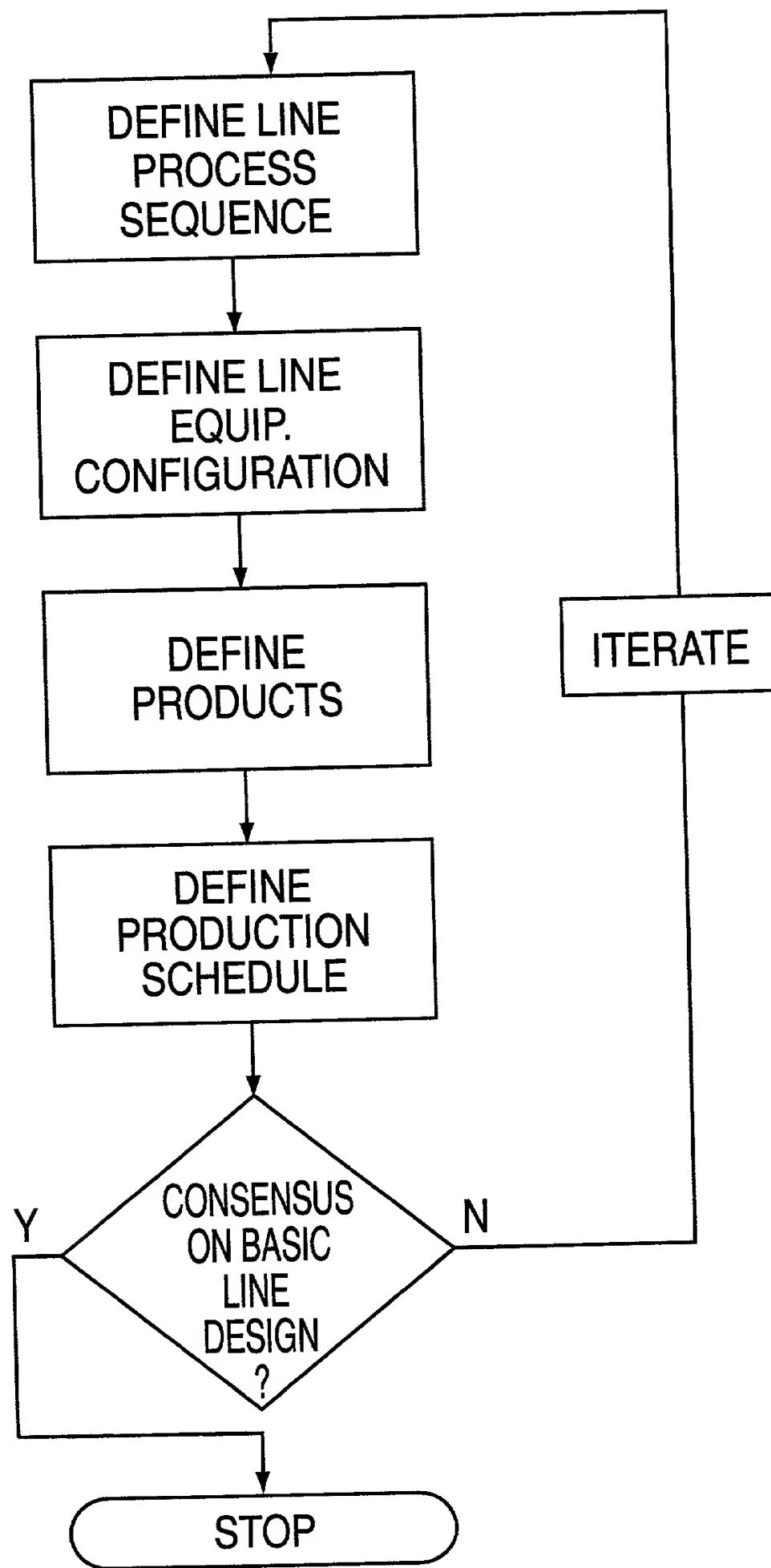
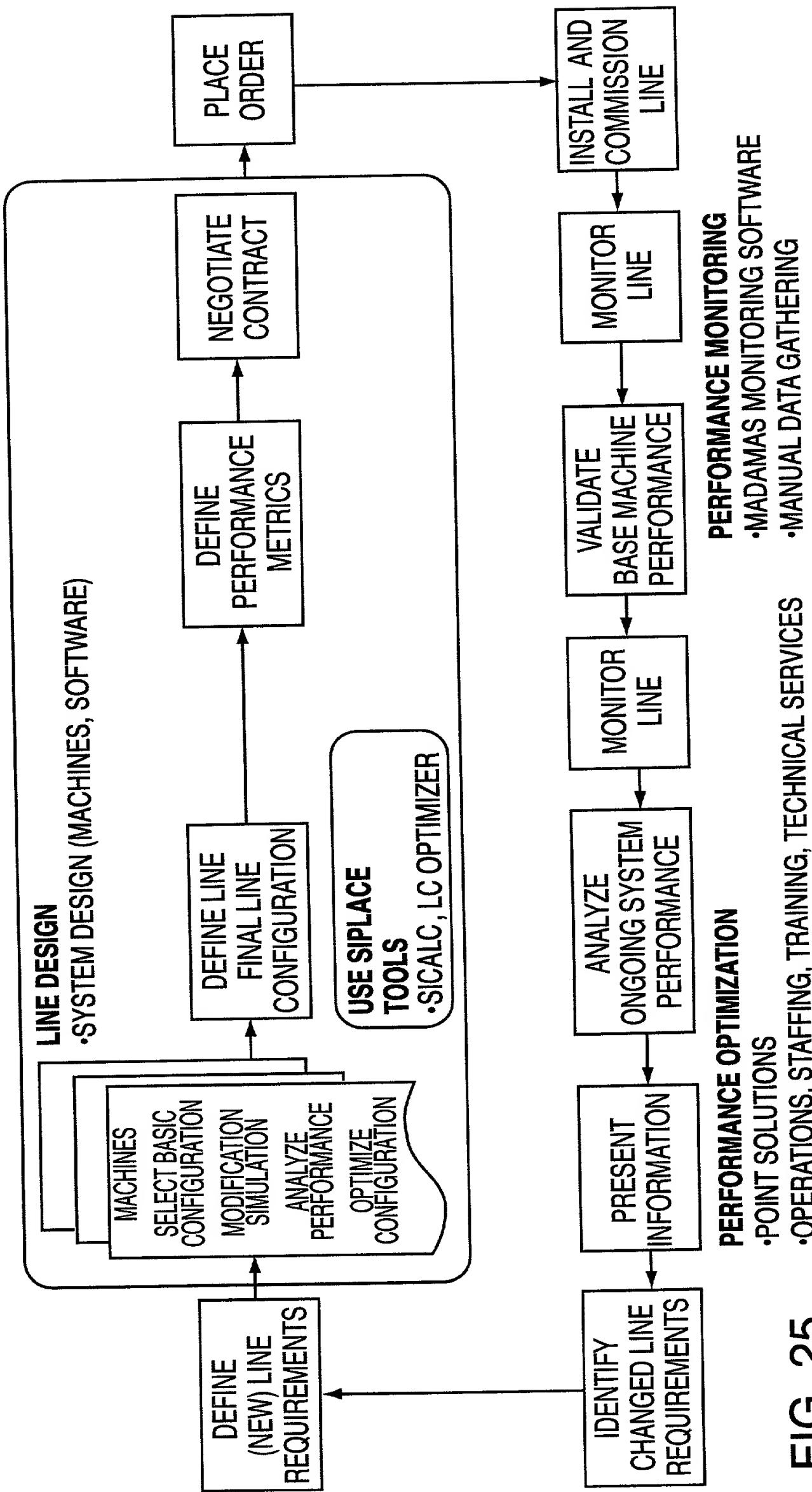


FIG. 24



**FIG. 25**

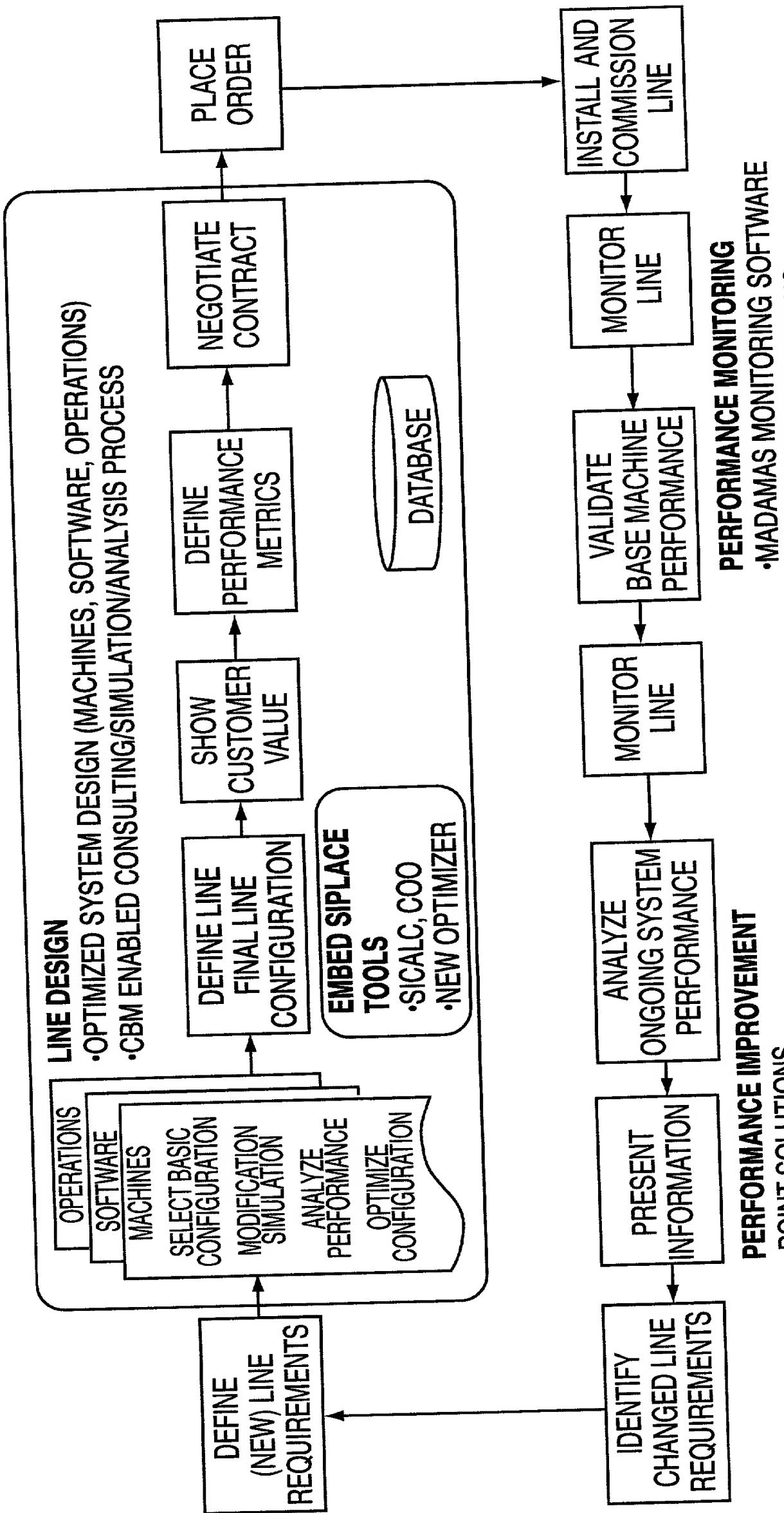


FIG. 26

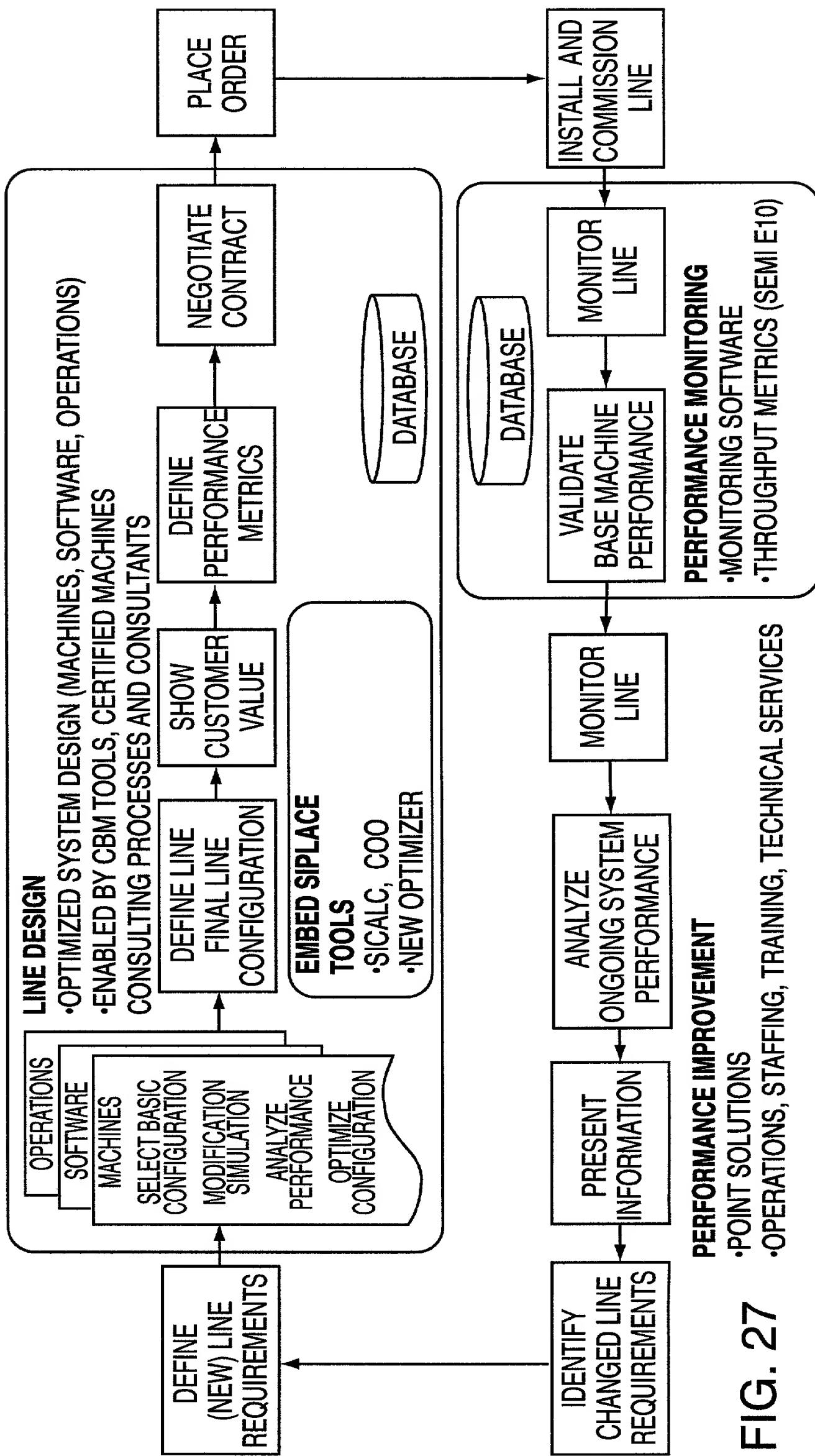


FIG. 27

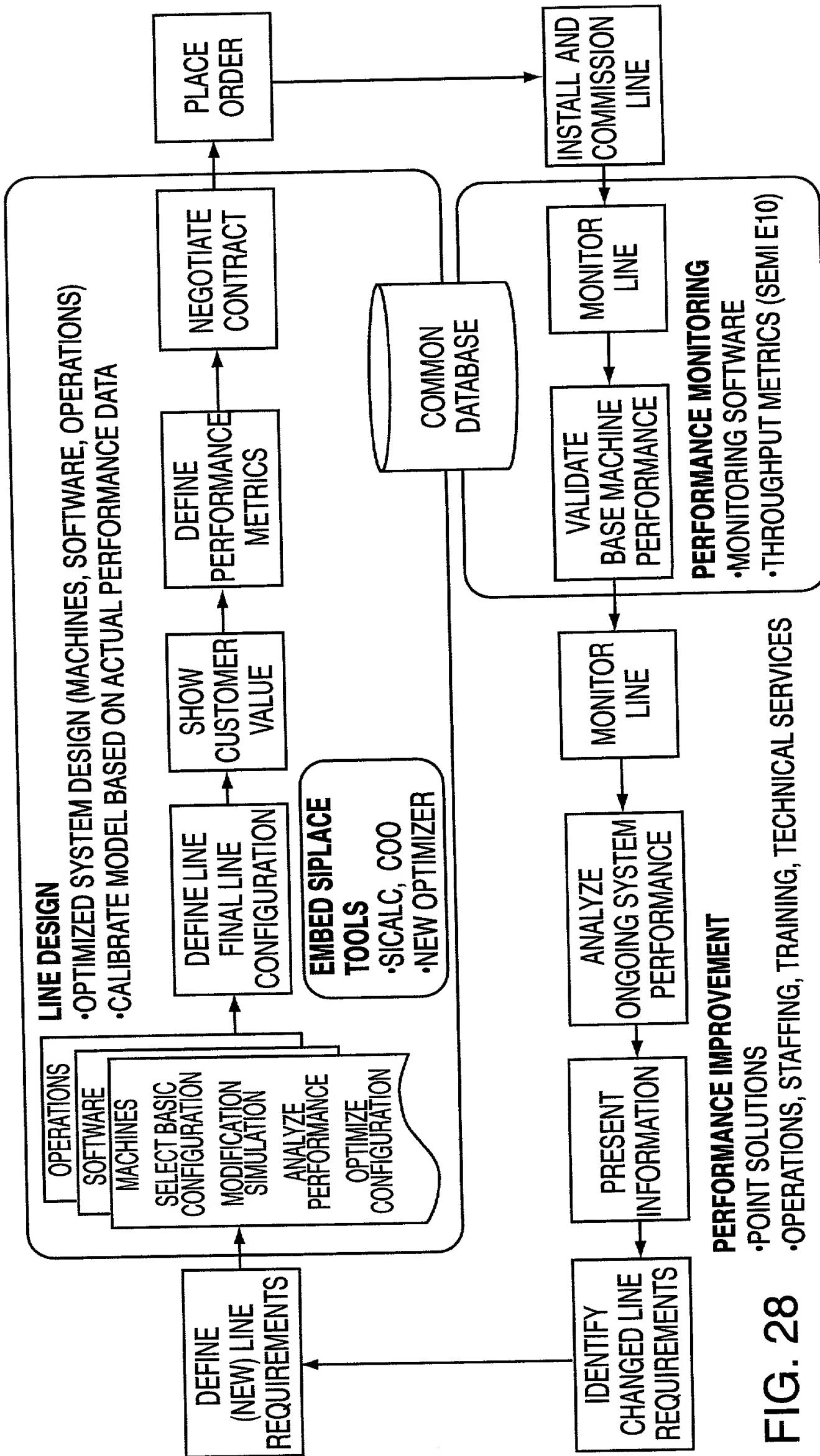
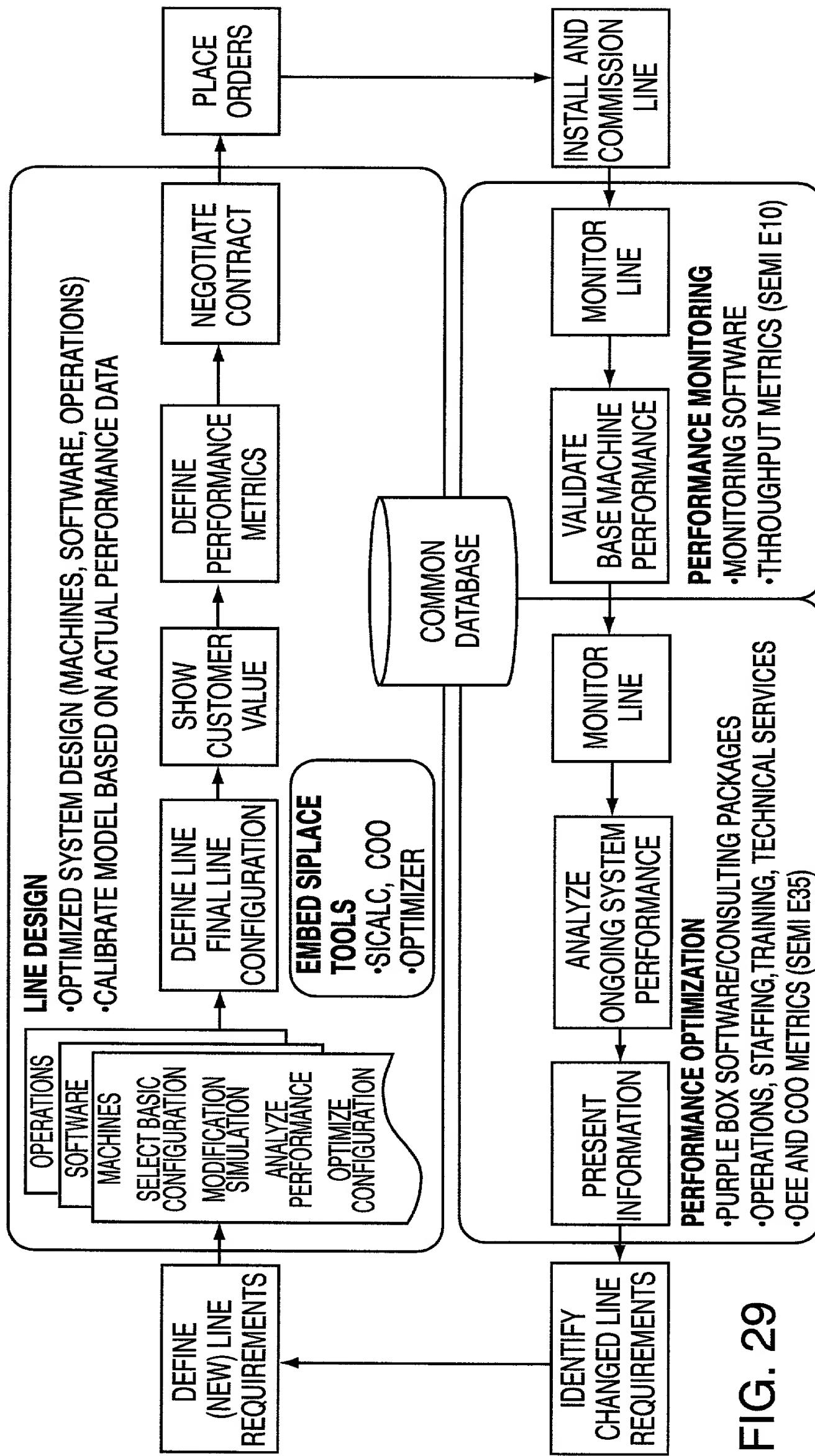


FIG. 28



**FIG. 29**

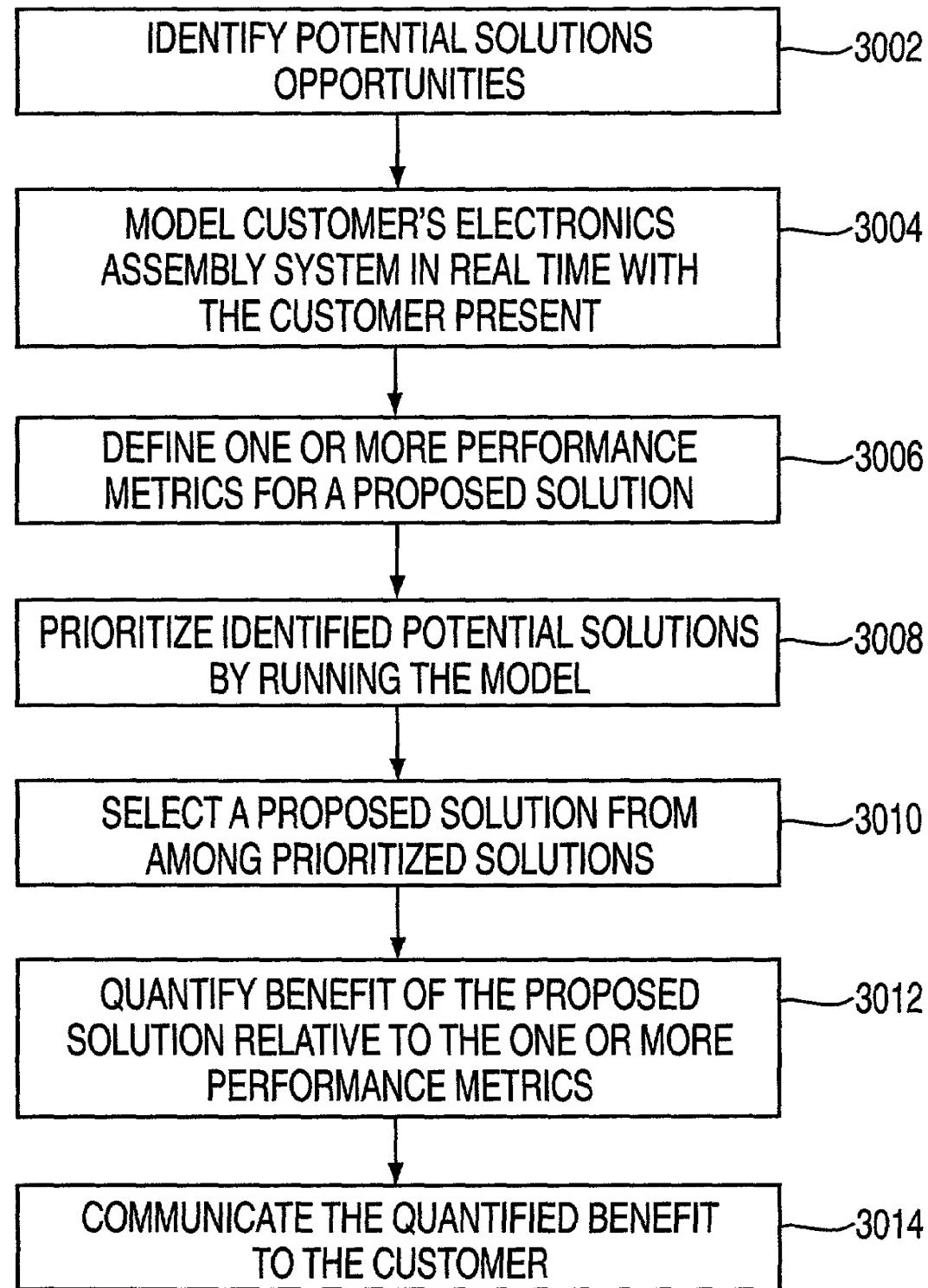


FIG. 30

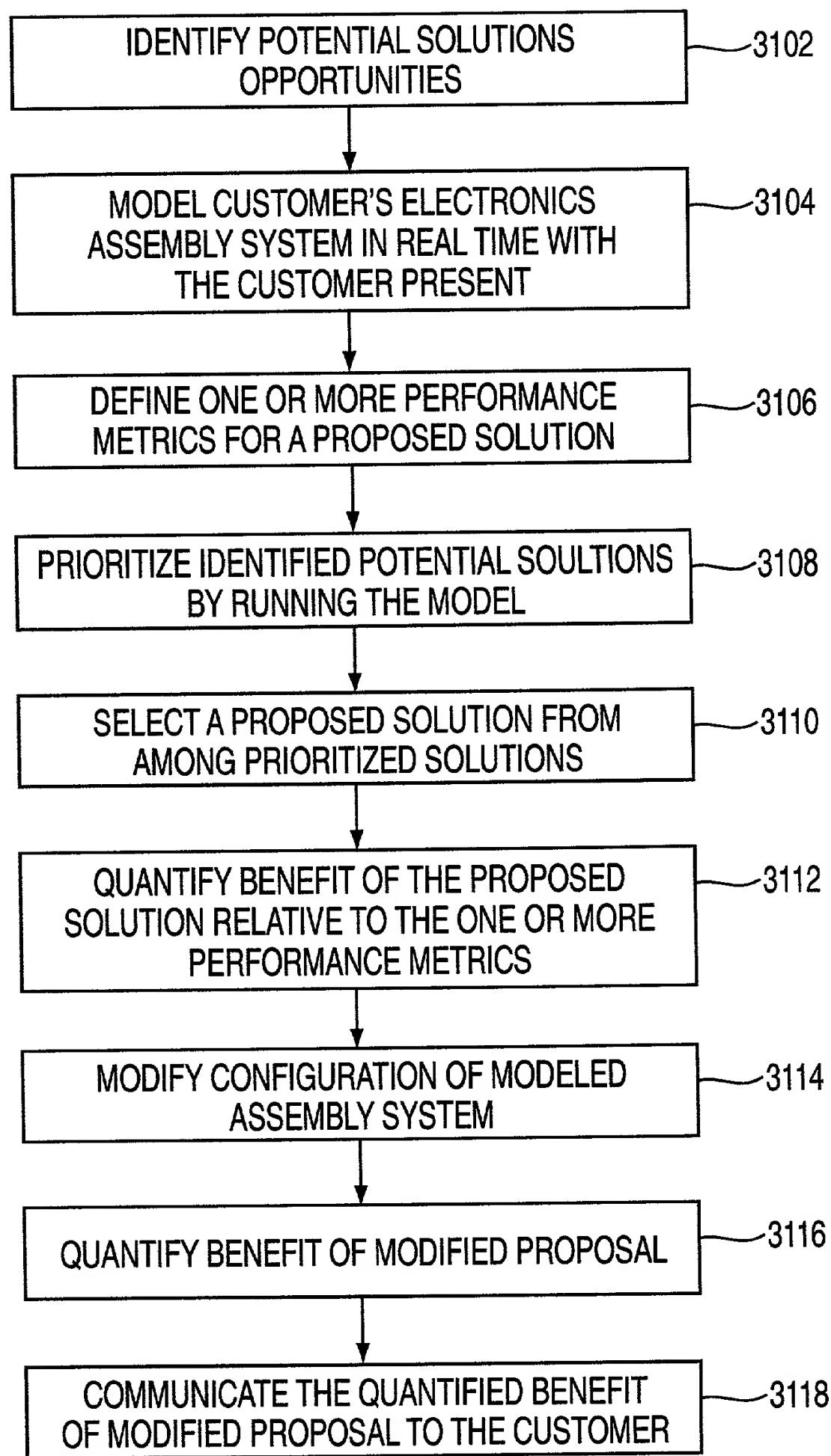


FIG. 31

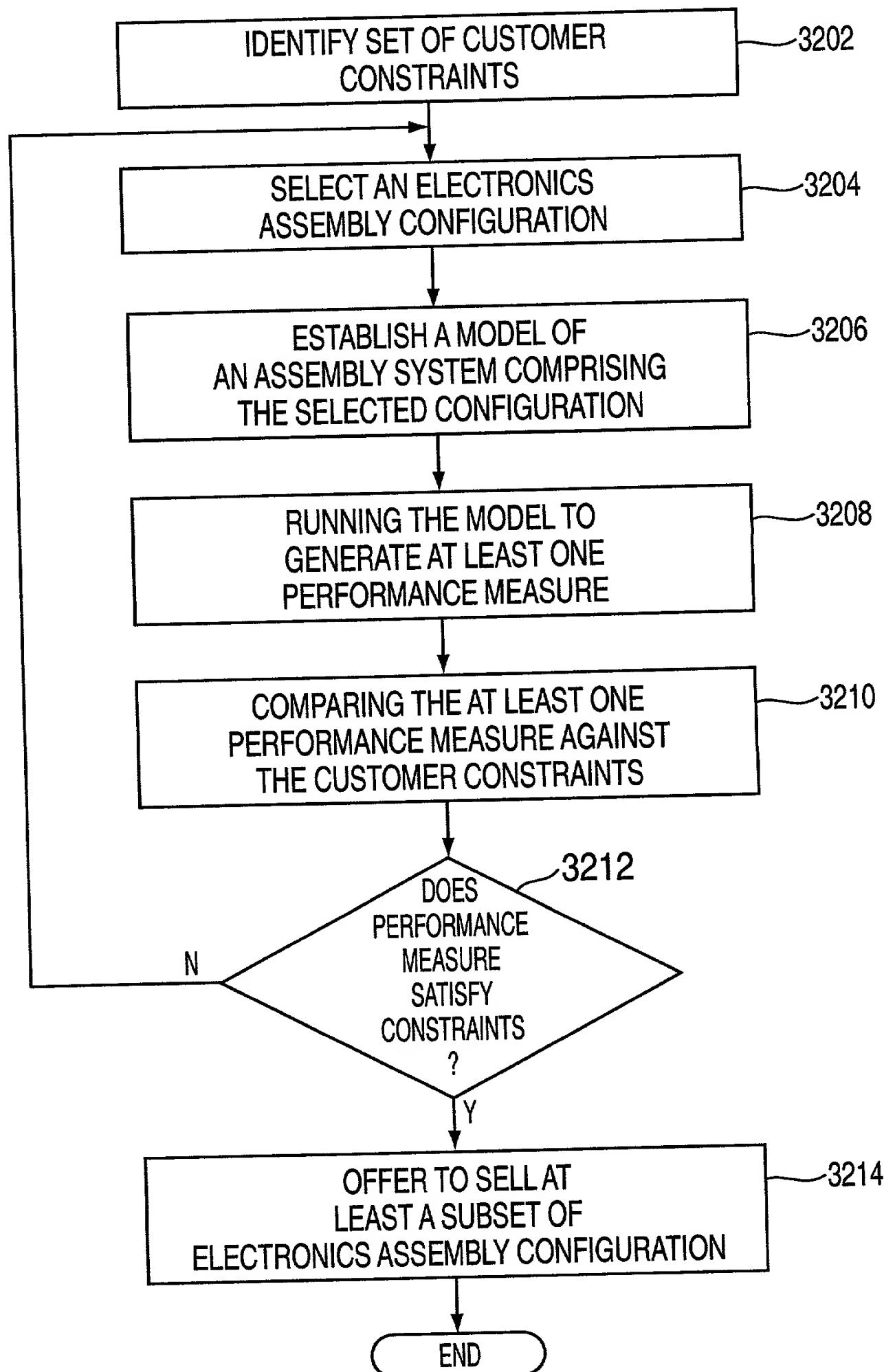


FIG. 32

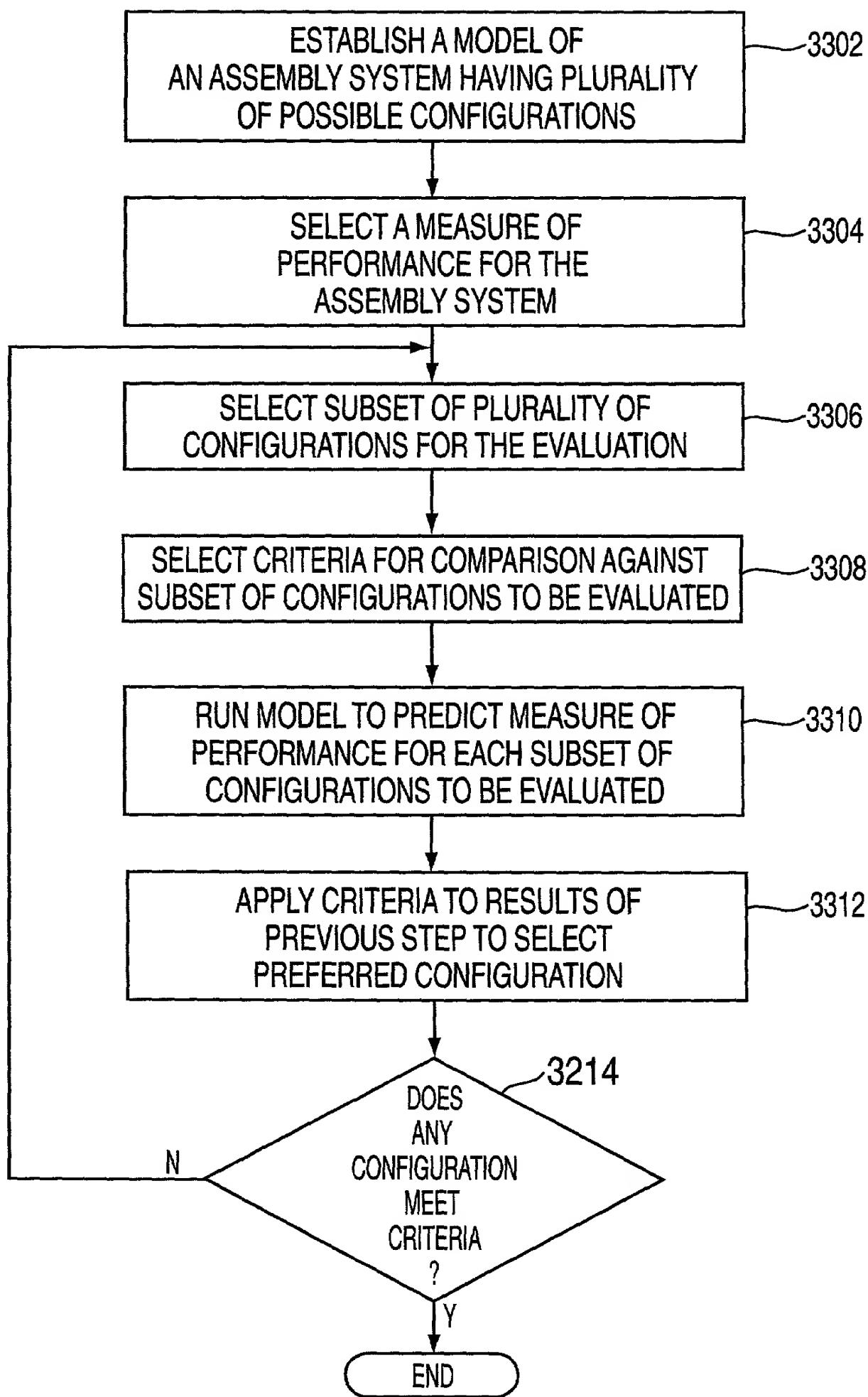


FIG. 33

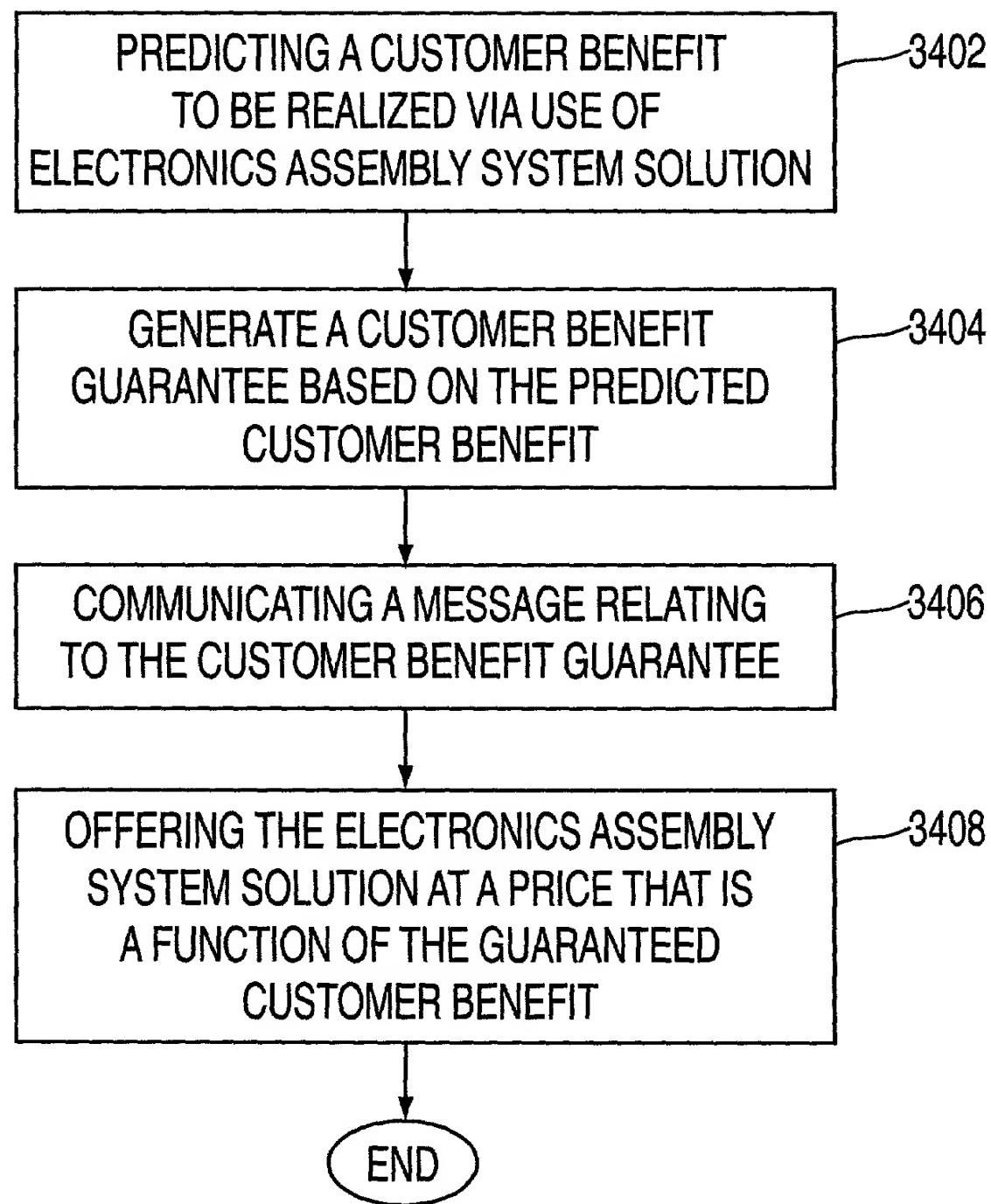


FIG. 34

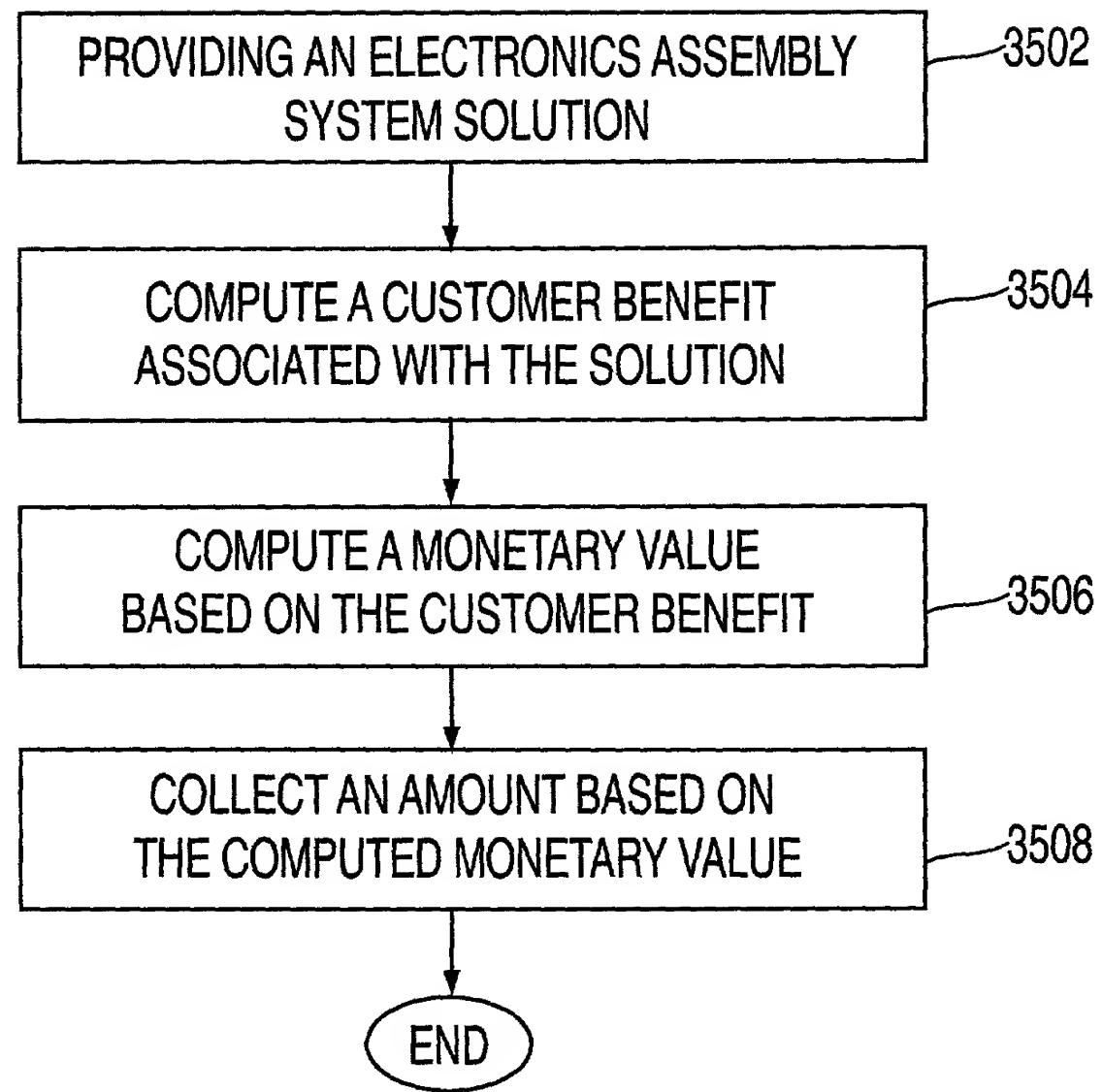


FIG. 35

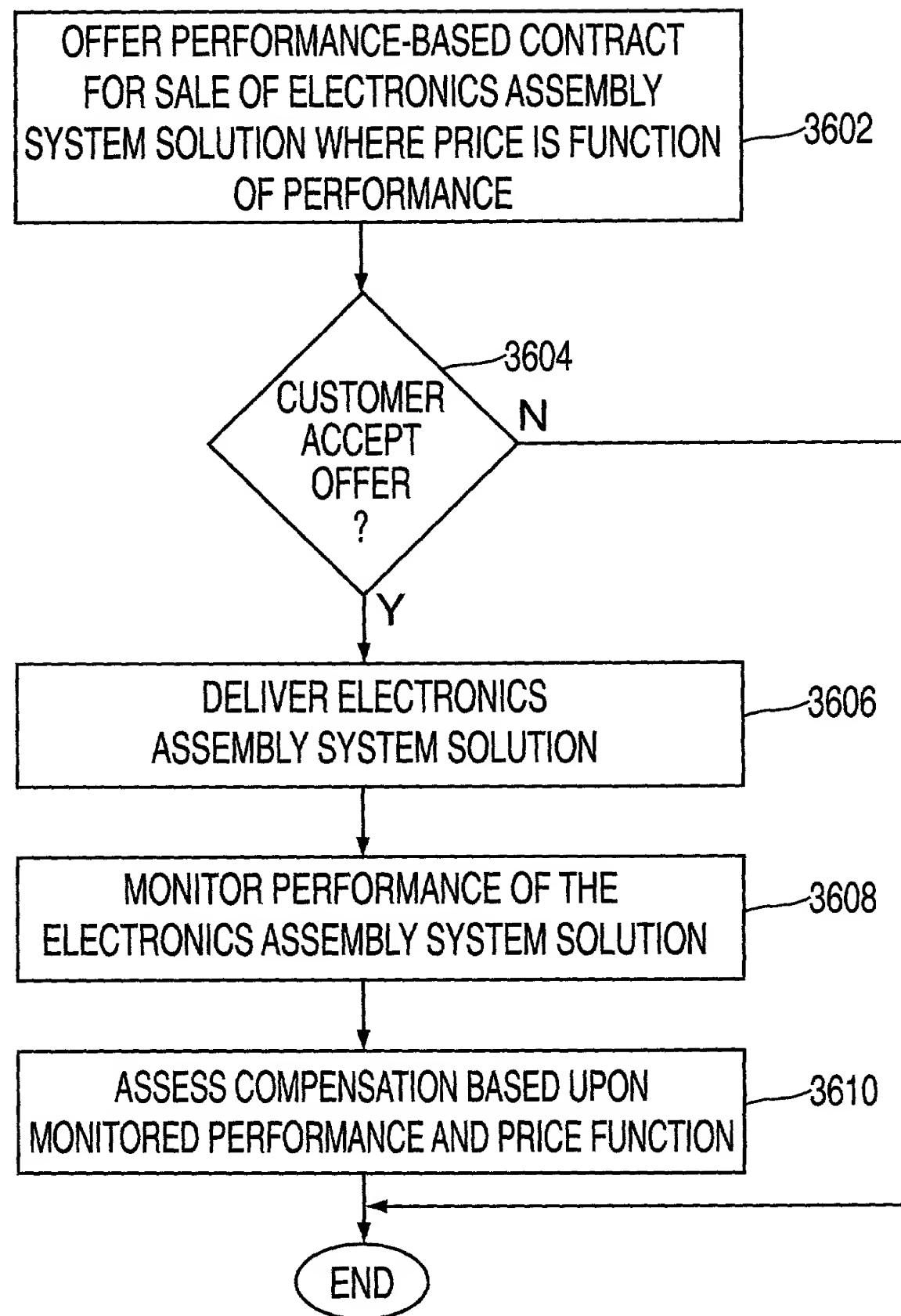


FIG. 36